



OPERATING INSTRUCTIONS

for the

HSE PLUGSYS® MiniCase Type 609

(Version 1.2 / printed: June 2010 from Serial. No. 96001 Hel.)

NOT FOR HUMAN USE

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Foreword

These Operation Instructions describe the functions and the use of the PLUGSYS MiniCase Type 609 developed and manufactured by HUGO SACHS ELEKTRONIK - HARVARD APPARATUS GmbH. The description must always be read in conjunction with the Operating Instructions of the modules installed in the MiniCase.

The description of a technical product can never be really complete and can not cover all possible applications. Please address any queries to the dealer from whom you have purchased the equipment, or directly to HUGO SACHS ELEKTRONIK - HARVARD APPARATUS GmbH using the reply form at the end of these Operating Instructions.

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All the information in these Operating Instructions has been assembled after careful evaluation but does not represent a warranty of product properties. In addition, we reserve the right to introduce changes in line with technical progress.

Copyright

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General description

The housing series PLUGSYS MiniCase Type 609 is intended as case and power supply for PLUGSYS measuring and computing amplifiers. The small housing MiniCase is a low-cost and space-saving alternative for 1 or 2 modules and allows PLUGSYS measuring and computing amplifiers to be used as conventional stand-alone units. Unlike the PLUGSYS housings Type 601 and 603, the MiniCase has no system bus as feed-in for power supply and as internal signal link between the individual modules. For this reason the MiniCase systems are supplied by HUGO SACHS ELEKTRONIK - HARVARD APPARATUS GmbH individually wired up and configured to suit the actual requirements. Because of the absence of an internal system bus and the limitation to 2 modules the MiniCase is only suitable for use with certain modules or module combinations as shown in the chart at the end of the product description. The chart also provides details on any MiniCase extensions which may be required: Options 01 to 06.

Standard specification of the MiniCase

- ABS plastics housing, flame-resistant to UL94VO, colour RAL 7032 (stone grey), with ventilation slots at the sides.
- Modular power supply 85 - 264 V AC (40 Watt), output voltage 5 V DC (5 A) and ± 12 V DC (0.5 A) for supplying PLUGSYS modules.
- 3-pin IEC mains input socket combination with fuse and mains switch on the back of the housing.
- Suitable for taking front panels of 16E max. width (1E = 5.08 mm), total 81.3 mm.

MiniCase Options

Add-on options to the standard PLUGSYS MiniCase 609 are available to meet individual requirements. The options in your equipment are shown on the equipment label.

- Option 01** Wider case through internal straps, extra width 9E (1E = 5.08 mm) corresponding to 46 mm. The case can then take front panels up to 25E, corresponding to 127 mm.
- Option 02** Power supply with additional +24 V (1.6 A) output.
- Option 03** Carrying handle for secure transport in mobile use.
- Option 04** 4 BNC sockets on the back of the unit for signal inputs or outputs.
- Option 05** Empty MiniCase housing without power supply and mains input, to take non-electrical PLUGSYS modules, such as Gas Select Module GSM Type 671/4.
- Option 06** Standard power supply to meet the requirements for clinical applications.

Hazards in operation

Through the use of a power supply conforming to the international regulations for equipment safety there is no electrical hazard when operating the equipment. If however the equipment is damaged through inappropriate use, falling off the bench or ingress of moisture and dirt it is essential that its safety and functionality is checked by a properly qualified technician.

List of equipment supplied

Check that the shipment is complete and undamaged. The equipment consists of the MiniCase with mains supply cable and the PLUGSYS modules installed in it, together with their Operating Instructions and accessories.



Before starting to work with your new equipment please check the information on the label that the supply voltage required to operate the MiniCase agrees with your local supply. If you have any doubts in this regard please ask a technician in your organisation, the dealer from whom you have purchased the equipment, or HUGO SACHS ELEKTRONIK - HARVARD APPARATUS GmbH directly.

Choice of location

The MiniCase should be arranged readily accessible on your work bench. Please note that moisture, heat, direct sunlight or dirt can severely detract from the function and the life of the equipment. There is also a danger that the MiniCase can be wrenched off the bench through unsuitably arranged connection cables or mains supply cable (trip-up trap).

Assembling the equipment

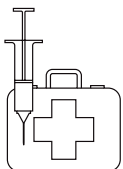
Connect the MiniCase to the mains supply using the mains supply cable enclosed. The mains switch is located at the back of the equipment above the mains cable input connector. Further details on the PLUGSYS modules installed in the MiniCase are given in the module Operating Instructions enclosed.



In order to reduce interference between the measurement electronics and the supply to a minimum it is important that the two cable systems are physically separated and never run parallel to each other. The cables should be secured to the experimental setup in order to ensure constant ambient measurement conditions.

The blank 4 mm banana socket on the front of the MiniCase can be used as earth for larger metal structures, e.g. laboratory stands. This avoids hum interference on the measurement signals due to the 50/60 Hz supply.

Maintenance



Any traces of salt solution should be removed immediately with a cloth in order to avoid corrosion damage on the metal parts, the controls and the electronics.

For cleaning the front panel, controls and connecting cable never use scouring powder or cleaning agents which tend to dissolve plastics.

Any dust should be removed with a lint-free cloth or a fine dust brush.

Serious dirt can be removed with soapy water or a conventional mild domestic detergent, using a soft cloth. Then wipe off with clear water. Never allow any liquid to pass into the equipment or into the switches and sockets.

Spots on the aluminium front panel can readily be removed using an ordinary plastic pencil rubber.

The interior of the equipment does not require any servicing or cleaning.

PLUGSYS module information chart


Module code	Module name	Type number	Can module be used ?	MiniCase Option 02	Note
ADC	Analog Digital Converter Module	664	no	---	---
BI	Bus Interface Module	657	no	---	---
BLM	Bus Link Module	680	no	---	---
BPA	Bio Potential Amplifier Module	675	yes	no	combination with IPH 5000 Type 675/1 possible
CFBA	Carrier Frequency Bridge Amplifier	677	yes	no	unfiltered output only with option 04
DBA	DC Bridge Amplifier	660	yes	no	unfiltered output only with option 04
DIF	Differentiator Module	664	yes	no	MAX and MIN output only with option 04
DM	Display Module	667	no	---	technically possible but not useful
DVM	Digital Voltmeter Module	666	yes	no	digital display of static values, e.g.from DBA
ECGA	ECG Amplifier	689	yes	no	---
EEGA	EEG Amplifier	690	yes	no	---
EFM	Electromagnetic Flowmeter Module	693	yes	yes	---
EIM	External Input Module	670	no	---	technically possible but not useful
EMGA	EMG Amplifier	691	yes	no	---
EMM	Electrometer Module	696	yes	no	---
FM	Flow Measurement Module	662	yes	no	requires LLC module Type 661 and Option 01
GSM	Gas Select Module	671/4	yes	---	Option 05 empty housing without power supply
HRM	Heart Rate Module	669	yes	no	---
LLC	Liquid Level Controller	661	yes	no	---
MEA	Micro Electrode Amplifier	695	yes	no	---
MMM	Max Min Module	668	yes	no	input via Option 04 or second module, e.g. DBA
ODM	Output Driver Module	672	no	---	---
OPPM	Oxygen Partial Pressure Module	697	yes	no	---
PCU	Plethysmograph Control Unit	687	no	---	---
PDM	Pressure Distribution Module	671/5	yes	---	Option 05 empty housing without power supply
PHDA	Peak Height Detector Amplifier	683	yes	no	---
pHMM	pH Measurement Module	694	yes	no	---
PPCM	Perfusion Pressure Control Module	671	no	---	---
PRM	Pressure Regulator Module	671/3	yes	---	Option 05 empty housing without power supply
PSM	Programmable Stimulator Module	676	no	---	---
QM	Quotient Module	679	yes	no	inputs via Option 04 or second module
ROM	Recorder Output Module	670	no	---	not useful
RRM	Respiration Rate Module	684	yes	no	---
RWT	R.Wave Trigger Module	689/1	yes	no	only usable together with ECG amplifier Type 689
SSM	Signal Subtraction Module	692	yes	no	inputs via Option 04 or second module
STOM	Software Trigger Output Module	688	no	---	---
TARM	Thermal Array Recorder Module	682	yes	yes	requires Option 01 wider housing
TCM	Timer Counter Module	686	no	---	---
TMM	Temperature Measurement Module	678	yes	no	signal output probe 1 to 4 via Option 04
TTFM	Transit Time Flowmeter Module	700	yes	no	---
VCM	Ventilation Control Module	681	yes	yes	---
VSM	Ventilation Sequencer Module	698	yes	yes	---

Option 01 = wider MiniCase

Option 02 = power supply with additional output 24 V (1.6 A)

Option 04 = 4 additional BNC outputs on back of housing

Option 05 = empty MiniCase without power supply

 = module can not be used or combination not useful

Stand 02/97 (E_MODULE.FH3/He)

Conformity



This product and accessories conform to the requirements of the Low-Voltage Directive 73/23/EWG as well as the EMC Directive 89/336/EWG and are accordingly marked with the CE symbol.

Technical Data PLUGSYS MiniCase Type 609

Construction	2-part flame-resistant ABS plastics housing conforming to UL94VO, colour RAL 7032 (stone grey), with ventilation slots in the sides of both housing shells.
Number of modules and width	The MiniCase provides a maximum width for 16 units (16E, 1E = 5.08 mm, 16E = 81.3 mm). With PLUGSYS modules of 8E standard width a MiniCase can take two modules. Under certain conditions it is possible to fit 3 modules (internal straps, Option 01).
Supply	Supply 85 - 264 V AC (40 Watt) with automatic supply voltage adjustment and interference suppression to EN 55022 graph B. The standard module supply is 5 Volt (5 A) and ± 12 Volt (0.5 A).
Option 1	Internal straps expand the housing by 9 width units (9E, 1E = 5.08 mm), corresponding to 46 mm. The total width available is then 25E corresponding to 127 mm.
Option 2	Additional power supply module with 24 Volt (1.6 A) output. This increases the maximum power consumption of the MiniCase to 80 Watt.
Option 3	Carrying handle for secure transport in mobile use.
Option 4	4 additional BNC sockets on the back of the unit for signal inputs or outputs.
Option 5	Empty MiniCase housing without power supply, to take non-electrical PLUGSYS modules, such as Gas Select Module GSM Type 671/4. This reduces the housing width to 105 mm.
Option 6	Module power supply to meet the requirements for clinical applications to IEC 601 / RN 60-601 and UL544.
Dimensions	Width 160 mm (option 01 = 206 mm), height 160 mm, depth 250 mm
Weight	2 kg approx. with one average PLUGSYS module
Accessories	Mains supply cable and Operating Instructions

